REMARKS

Claims 12 and 17 are rejected, under 35 U.S.C. § 102, as being anticipated in view of Borland et al. '738. The Applicant has canceled claims 12 and 17 without prejudice or disclaimer of the subject matter therein. The subject matter of claim 12 has been incorporated into claim 22 to overcome the noted objection to claim 22, and in view thereof, the Applicant respectfully requests withdrawal of the anticipation rejection.

Claims 8-10 and 13-15 are rejected, under 35 U.S.C. § 103, as being unpatentable over Borland et al. '738 in view of Krimmer et al. '977. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the following remarks.

The above noted claims are rejected over the combination of Borland et al '738 and Krimmer et al '977. This combination is supported, as discussed at para. 5 of the Official Action because, "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the valve device of Borland et al. by adding a cap and a filter as taught by Krimmer et al. in order to filter the gas as it enters the valve." The Applicant takes issue with the combination of these references because neither the references themselves, nor the asserted reasoning in the Official Action supports any such combination.

As the Examiner is aware, in order to appropriately support a combination of references, the references themselves must provide some level of disclosure or teaching that would lead one of ordinary skill in the art to combine the references in the manner as suggested in the Official Action. While recent case law may have arguably narrowed the specific, teaching, suggestion and motivation (TSM) test for obviousness, the fact remains that any combination of references must still be supported with some articulated rational beyond subjective, conclusory statements. Whatever the status of the current test for obviousness, it is important to note that the U.S. Supreme Court cautioned against "mere conclusory statements" of

obviousness and called for "some articulated reasoning with some rational underpinning". It is clear from this that the combined references must have at least some level of relevance to one another and also provide disclosure or teaching which would support a combination which can be rationally, and convincingly explained and described.

As an initial matter, the conclusory statement that it would be obvious to modify the valve device of Borland et al. with a filter in order to filter the gas as it enters the valve, is no more or less obvious than it is to filter any fluid, in any process, be it drinking water, chemical etching, distillation or fuel delivery. Almost any manufacturing process utilizing a fluid can attest to the use of a filter at some point in the process. Critically, what this argument fails to take into consideration is the very nature of the references themselves which is of course still the key to supporting an obviousness rejection.

The bi-directional valve disclosed by Borland et al. `738 is both structurally and functionally an entirely different type of valve than the fuel vapor trapping valve disclosed by Krimmer et al `977. Secondly, that Borland et al. `738 does not disclose or teach any sort of filter device at any point in the structure or function of the valve, and thirdly, the filter disclosed by Krimmer et al. `977 would be structurally impossible to combine with Borland et al., and even still, does not disclose or teach the features of the Applicant's presently claimed invention.

Borland et al. `738 relates specifically to a bi-directional valve for filling and discharging a fuel cell or cylinder as noted in the Abstract of the disclosure:

> A bidirectional solenoid operated valve for controlling the flow of a compressed gas *to and from* a pressurized vessel...(emphasis added)

Fundamentally, this is entirely different from a vapor trapping valve for a conventional automobile fuel tank as disclosed by Krimmer et al '977, not unimportantly because of the fact that Borland et al. `738 relates to compressed natural gas (CNG) which is often under extreme

pressure, up to several thousand pounds per square inch, whereas a conventional gas tank actually has a negative pressure due to fuel withdrawal.

It is well known that valves for vapor trapping systems like Krimmer et al. `977 are placed in the fuel line between the fuel tank and the engine. At different times vapor released by the vehicle's fuel tank are collected, usually in a charcoal canister of some sort in the vapor trapping system. At appropriate times, usually determined by the engine controller during engine operation, these trapped vapors, or gases, are released into the combustion system by the fuel tank vent valve at a particular temperature or when the engine is under a certain load. This valve is modulated during operation of the vehicle by the engine controller for the best efficiencies of the engine. Importantly, it is also well known to use such vapor trapping systems and valves as pressure release valves for the fuel tank. As is well known in conventional fuel tanks, without such a pressure release valve the fuel tank could eventually implode from atmospheric pressure as fuel usage causes the internal pressure inside the fuel tank to drop. This is of course an entirely different valve, both structurally and functionally from that of Borland et al. `738 which clearly calls is for a highly pressurized fuel tank or cell.

Krimmer et al. `977 is also different from the bidirectional valve because it permits fuel, whether vapor or in liquid, to flow in only a single direction. Also, the vapor trapping valve in Krimmer et al. has an entirely different function i.e. it captures and retains the vapors in a conventional fuel tank which are generally not found in compressed gases where compressed gases like CNG for fuels are maintained in a compressed state so that the chemical state of the fuel does not change as in un-pressurized conventional fuel tanks.

Structurally, these valves have nothing in common except they are arguably actuated in some respect by a solenoid. Like filters, solenoids are well known to use in the actuation of any type of valve and as such lend little support to the combination of these two particular references. Borland's bi-directional valve includes a valve seat 36 and valve poppet 40 which are located *inside* the fuel cylinder 12 as seen in Fig. 2 of Borland et al. The valve

seat 36 and poppet 40 along with pilot seat orifice 100 operate so as the efficiently balance the pressures on either side of the pilot seat orifice 100 and so permit the solenoid valve 38 to be continuously actuated solely by a 12 volt dc power source. As discussed in Borland et al. At col. 4, ll.26-31;

> As shown in greater detail in Fig. 7, solenoid valve 38 is a pilot assisted or operated valve which permits the use of a solenoid which can be operated continuously with a standard nominal 12 volt DC power supply found in almost all automotive vehicles.

The Applicant notes that Borland et al '738 is specifically shown and described as having the solenoid valve mounted *internally* of the pressurized fuel cylinder. The stated purpose of Borland et al '738 is to provide a substantial increase in safety by an internally mounted solenoid actuated valve as discussed at column 2 lines 19-25.

> In a preferred embodiment of the invention, the solenoid valve is mounted adjacent the first end of the gas flow passage and internally within the pressurized cylinder in a manner which shields the working components of the valve from damage in the event of a crash or impact.
> Preferably, the valve seat in located in the valve body and gas flow passage so that it is within the interior of the cylinder when it is in place so that in the event of an impact which sheared off any exposed portions of the valve, the poppet head would maintain its position sealed against the valve seat, preventing the flow of gas out the valve.

On the contrary, Krimmer et al '977 relates to a fuel vapor trapping system and valve which is as is clearly not incorporated within the fuel tank at all, but is in fact positioned

in a fuel line between the gas tank and the internally combustion engine. This well known external location of the devices such as Krimmer et al '977 vapor trapping system are external to the tank and in fact clearly subject to the effects which Borland et al '738 is trying to avoid namely the effects of crashes which can crush externally mounted valve devices.

In effect, the only similarity between these two types of valves is that they include a solenoid to assist in an actuation of the valve and in their relation to some type of fuel source. Other than that, these valve serve entirely different purposes and functions and would not, and undoubtedly could not be combined by one of ordinary skill in the art as suggested by the Examiner.

The Official Action rests its support for the obviousness rejection on the supposition that it would be obvious to add the *cap and filter* taught by Krimmer et al '977 in order to filter the gas as it enters the valve. However, the cap and filter as disclosed in Krimmer et al '977 would certainly not work inside the confined space of the fuel cylinder as disclosed by Borland et al '738. As seen in Fig. 1 of Borland et al., the cup-shaped housing part 4 which holds the filter 40 is made substantially larger than the inflow and outflow passages 8 and 9 for the fuel. This substantial size differentiation is further discussed at paragraph 4 lines 6-13 "The dirt filter 40 has a disc like shape and radially fills the annular chamber so that this chamber has a considerably larger flow cross section than the flow cross section of the in flow adaptor 8. Such a large flow cross-section produces only slight flow resistance in the flow if fuel vapor and results in only an extremely slight pressure loss at the dirt filter 40, and as a result a reduction in the throughput of the valve 1 during the intended service life can be precluded."

It is clear from observing Fig. 2 of Borland et al '738 that such a cup-shape feature with a significantly larger cross section than the inflow tube 8 shown in Krimmer et al '977 would create significant problems and undoubtedly be impossible to fit through the opening of the fuel cylinder 12 (which must have a relatively small opening because of the significant pressurization issues) and into the internal cavity of Borland et al '738.

Even if it were conceivable to combine these references, and the Applicant does not concede such fact in any event, the references as combined still fail to disclose the Applicant's presently claimed invention. In Krimmer et al. '977 the filter 40 is provided in the cup-shaped housing part 4, and the cap-shaped housing part 5 is provided at one end to cover the the cup-shaped part 4. In fact, the cap-shaped member is at the complete opposite end of the cup-shaped member from the filter 40 in the applied reference.

On the contrary, claim 8 specifically recites the feature wherein the filter is located in the cap; "a cap member being provided to cover the end part of the valve body inside the gas tank, an opening formed in an end face of the cap member communicating with the flow passage, and a flat plate-like filter member being disposed in the opening." This specific structural design, *as claimed*, is not disclosed, taught or suggested in any manner by the applied references either alone or in combination. Similarly claim 10 recites the entirely different filter structure and positioning of the present invention including, "an opening communicating with the flow passage being formed *on an outer peripheral side of the valve body*, and a ring-like filter member being disposed in the opening. " (emphasis added.) Such structure of a ring type filter positioned around the outer periphery of the valve body is also not disclosed or taught in any manner by the cited references.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised obviousness rejections should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejections or applicability of the Borland et al. '738 and Krimmer et al. '977 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to

enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,

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